

## **REMARKS**

Claims 55-75 are indicated in the Office Action to be allowed. Applicant's appreciate the recognition of patentable subject matter in the present application.

Claims 51-53 and 76-77 stand rejected under 35 U.S.C. §103(a) for obviousness over Sugino in combination with Suzuki or Ngaoaram.

Applicants respectfully traverse the rejections and urge allowance of the present application.

Independent claim 51 defines a method of forming a transistor gate comprising, in part, forming a gate oxide layer, providing fluorine within the gate oxide layer, and forming a gate proximate the gate oxide layer having the fluorine therein after the providing. Claim 51 defines patentable subject matter over the prior art of record.

On page 2 of the Office Action, it is stated that Sugino does not mention fluorine. Thereafter, it is stated that Suzuki or Ngaoaram teaches forming gate oxide on a silicon substrate and treating silicon oxide halogen atmosphere, which includes fluorine. Thereafter, it is stated that it would have been obvious to provide fluorine of gate oxide in the invention of Sugino. Applicants disagree.

Referring to MPEP §2146(j)(3), there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify or combine reference

teachings. The mere fact that references *can* be combined or modified does not render the resultant combination obvious *unless the prior art also suggests the desirability of the combination*. MPEP §2143.01 citing *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

There is absolutely no motivation or suggestion to combine the teachings of either Suzuki or Ngaoaram with the teachings of Sugino. A proper obviousness rejection of a claim requires clear and particular motivation to combine the reference teachings in support of the rejection. No motivation or suggestion to combine the inapposite reference teachings exists. The lack of motivation or suggestion in the present obviousness rejection is clearly evidenced by the failure of the Office Action to positively indicate any motivation for one of ordinary skill in the art to combine the teachings of the Suzuki or Ngaoaram references with the Sugino teachings to arrive at the obviousness rejection. Any rejection based upon §103 without the required motivation or suggestion is improper. Applicants respectfully request withdrawal of the obviousness rejection over Sugino in combination with Suzuki or Ngaoaram for at least this reason.

The claims which depend from independent claim 51 are in condition for allowance for the reasons discussed above with respect to the independent claim as well as for their own respective features which are neither shown nor suggested by the cited art.

For example, dependent claim 52 defines the fluorine provided in the

gate oxide layer to a concentration of from about  $1 \times 10^{19}$  atoms/cm<sup>3</sup> to about  $1 \times 10^{21}$  atoms/cm<sup>3</sup>. Even if the prior art teachings are improperly combined, such combination fails to teach or suggest positively claimed limitations of claim 52 including the claimed concentration of fluorine.

A proper anticipation rejection requires that *each and every element* of the claimed invention be disclosed in a single prior art reference. *In re Spada*, 911 F.2d 705, 15 USPQ2d 1655 (Fed. Cir. 1990). The corollary of this rule is that the absence from a cited §102 reference of *any* claimed element negates the anticipation. *Kloster Speedsteel AB, et al. v. Crucible Inc.*, 793 F.2d 1565, 230 USPQ 81 (Fed. Cir. 1986).

Positively recited limitations of claim 52 are not shown or suggested in the prior art. Applicants respectfully request allowance of dependent claim 52 for at least this additional reason.

Dependent claim 53 defines the gate comprises opposing lateral edges and a central region and the fluorine being provided within the gate oxide layer to a greater concentration proximate at least one of the gate edges than in the central region. Claim 53 is allowable over the prior art of record.

None of the prior art references of record teach providing fluorine within the gate oxide layer to a greater concentration proximate at least one of the gate edges than in the central region. As stated in the abstract and in column 3, lines 35-40 of Sugino, chlorine radicals *uniformly penetrate* the oxide layer 3 referring to Fig. 3 of Sugino. Such uniform penetration is

*agree*

shown in Fig. 3 and fails to teach or suggest provision of fluorine in a gate oxide layer to a greater concentration proximate at least one of the gate edges than in the central region as positively recited in claim 53.

Referring to the Suzuki patent, in column 6, from lines 9-13, it is stated that a halogen-rich layer is expected to develop in the vicinity of the surface of the silicon oxide film 14 with reference to Fig. 1c. Such disclosure of the halogen-rich layer in the vicinity of the surface of the silicon oxide film 14 fails to teach or suggest the claimed fluorine being provided within the gate oxide layer to a greater concentration proximate at least one of the gate edges than in the central region as stated in claim 53. ) Seal

The abstract and column 3, lines 33-40, of Ngaoaram state that fluorine ions 20 congregate at the oxide/silicon boundary with references to Figs. 2-6. The uniform implantation of fluorine ions 20 in Ngaoaram fails to teach or suggest positively recited limitation of claim 53 including provision of fluorine within the gate oxide layer to a greater concentration proximate at least one of the gate edges than in the central region.

Limitations of claim 53 are not shown or suggested in any of the prior art references of record. Applicants respectfully request withdrawal of the obviousness rejection of claim 53 for at least this reason.

Support for the amendment to claim 52 is found at least on page 7, lines 1-16 of the originally-filed specification. Support for the amendment to claim 53 is found at least on page 12, lines 14-23 of the originally-filed

specification.

Applicants submitted an Information Disclosure Statement on August 11, 2000 (copy enclosed for the Examiner's convenience). Applicants have not received an initialed Form PTO-1449 for this IDS. Applicants respectfully request consideration of the references listed on the accompanying Form PTO-1449, initialization of the references thereon, and return of the initialed Form PTO-1449 to Applicants.

Applicants respectfully request allowance of all pending claims.

The Examiner is requested to phone the undersigned if the Examiner believes such would facilitate prosecution of the present application. The undersigned is available for telephone consultation at any time during normal business hours (Pacific Time Zone).

Respectfully submitted,

Dated: \_\_\_\_\_

1/24/01

By: \_\_\_\_\_

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